12/12/02
(First draft)

National Animal Health Emergency Management System Guidelines
U.S. Department of Agriculture

2002

Operational Guidelines

Wildlife Management

The National Animal Health Emergency Management System Guidelines provide an operational framework for use in dealing with an animal health emergency in the United States

The guidelines are produced by the
Veterinary Services Unit of the Animal and Plant Health Inspection Service,
U.S. Department of Agriculture

These guidelines are under ongoing review. Please send questions or comments to:

Emergency Programs
Veterinary Services
Animal and Plant Health Inspection Service
U.S. Department of Agriculture
4700 River Road, Unit 41
Riverdale, Maryland 20737-1231
Telephone: (301) 734-8073 or 1-(800) 601-9327

Fax: (301) 734-7817
E-mail: EMOC@aphis.usda.gov

The above address also may be used to request paper copies of the guidelines**.** Every effort is made to provide accurate and useful information. However, the U.S. Government, the U.S. Department of Agriculture (USDA), and the Animal and Plant Health Inspection Service (APHIS) and their employees and contractors assume no legal liability for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed herein. Neither the U.S. Government, USDA, or APHIS nor their employees and contractors makes any warranty, expressed or implied, including the warranties of merchantability and fitness for a particular purpose with respect to documents or information available in these guidelines. All indirect, consequential, implied, punitive, and special damages are deemed waived if you use the information in these guidelines in any manner. The sole remedy is the price paid or, at the seller's choice, replacement or repair of the defective information. Trade names are used solely for the purpose of providing specific information. Mention of a trade name does not constitute a guarantee or warranty of the product by USDA or an endorsement by the Department over other products not mentioned.

USDA prohibits discrimination in all its programs and activities on the basis of race, color, national origin, sex, religion, age, disability, political beliefs, sexual orientation, or marital or family status. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 1400 Independence Avenue, SW, Washington, DC 20250-9410 or call (202) 720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

PREFACE

"Wildlife Management," a component of APHIS' National Animal Health Emergency Management System (NAHEMS) Guidelines series, is designed for use in the event of a major animal health emergency such as an incursion of a foreign animal disease or a natural disaster in the United States. The NAHEMS guidelines provide information for use by any emergency animal disease eradication organization and for integration into the preparedness plans of other Federal agencies, State and local agencies, and additional groups involved in animal health emergency management activities. Topics covered in the guidelines include:

- Field investigations of animal health emergencies
- Operational procedures for disease control and eradication
- Site-specific emergency management strategies for various types of facilities
- Administrative and resource management
- Educational resources

The NAHEMS guidelines provide a foundation for coordinated national, regional, State, and local activities in an emergency situation. As such, they are meant to complement non-Federal preparedness activities. The guidelines are being reviewed and updated on an ongoing basis, and comments and suggestions are welcome.

"Wildlife Management" provides guidelines for Wildlife Unit Leaders and associated personnel responsible for regulatory enforcement activities. The guidelines are meant for use as a practical guide rather than as a comprehensive reference resource.

The general principles provided in the guidelines are intended to serve as a basis for making sound decisions. However, deviations from the guidelines may be permissible, if necessary, to address a given situation effectively. In addition, information provided in various sections may need to be combined to meet the requirements of a particular situation.

Acknowledgments

"Wildlife Management" reflects the efforts of a number of individuals, including an APHIS Veterinary Services (VS) Writing group, additional APHIS staff members, and a wide-range of reviewers. These reviewers include Federal and State Veterinarians, members of APHIS' animal health emergency response teams, officials of other Federal agencies, representatives of industry, and additional experts.

Also acknowledged with appreciation are the efforts of USDA staff and external reviewers involved with the development of the VS animal health publications ("red books") and similar documents that have served as information sources for the NAHEMS guidelines. The contributions of each individual are appreciated.

Contents

1 Introduction

This manual provides guidelines for the Wildlife Section of the Animal Emergency Response Organization (AERO), Emergency Programs (EP), Veterinary Services (VS), Animal and Plant Health Inspection Service (APHIS), United States Department of Agriculture (USDA), during a Foreign Animal Disease/Emerging Disease Incident (FAD/EDI). These guidelines describe a risk assessment to determine if a potential exists for wildlife involvement in a FAD/EDI, and subsequent surveillance and control procedures where such a potential is found. The guidelines are based on a presumption that a FAD/EDI incident initially would be detected in domestic animals, but can be adapted to other scenarios. Additional aspects of the wildlife response within the AERO framework are covered in this manual, including quarantine issues, personnel, and Wildlife Section roles and responsibilities.

Wildlife is defined for this manual as all free-ranging native, feral, and exotic animals in the United States. Wildlife may be involved in the maintenance and/or transmission of livestock and poultry diseases, and may complicate demonstration of freedom from such diseases at the conclusion of an eradication program. There is a paucity of information available for decision-making in regards to wildlife and FADs, and development of epidemiological information regarding wildlife will be necessary during a FAD/EDI.

Risk assessment, wildlife surveillance, and disease control in wildlife are presented sequentially in this manual, but these activities may occur simultaneously. These guidelines are written as a model, can be adapted to various FAD/EDIs, and the activities can be replicated where multiple FAD/EDIs occur over a widespread geographic area. However, local circumstances will dictate the specific course of action in a given area. The intent of this manual is to provide for an immediate but measured response to prevent the spread of a FAD/ED, and for development of information on which to base decisions and justify actions.

2 Wildlife Section Objectives

GOAL: To prevent transmission of a FAD/ED between domestic animals and wildlife.

OBJECTIVES:

a. Assess the presence of susceptible wildlife in the affected areas.
b. Assess the potential for spread of the disease agent to wildlife.
c. Determine if wildlife surveillance is needed.
d. Develop a protocol for wildlife surveillance.
e. Determine if the infection has spread to wildlife.
f. Determine if the disease agent is spreading via wildlife.
g. Determine if disease control within wildlife is necessary.

Where disease control within wildlife is necessary, additional objectives will apply.

a. Minimize risk of dispersal of wildlife from infected premises.
b. Reduce density of susceptible wildlife populations in affected areas if necessary.
c. Implement measures to prevent mechanical spread of the disease agent via wildlife.
d. Develop protocols for long-term surveillance.
e. Develop information on the current role of wildlife in the epidemiology of the disease.
f. Develop information on the current impact of the disease on wildlife.
g. Develop information on the impact of disease control and eradication measures on wildlife.
h. Provide justification for wildlife surveillance and control measures.
i. Assist the state wildlife agency and emergency response system in developing public support for Wildlife Section actions.
j. Evaluate and recommend hunting season and public lands closings.
k. Assist in appraisal of wildlife resources destroyed in disease control operations.

3 Personnel and Equipment

The Wildlife Section will include a Wildlife Coordinator (WC), one or more Wildlife Officers (WO), a State Wildlife Liaison Officer (SWLO) from each affected state, and field personnel.

The WC will be assigned by EP, VS, USDA, and will be located at the Emergency Management Operations Center (EMOC), APHIS, USDA. The WC will be a wildlife health specialist with AERO training and experience.

Wildlife Officers are assigned by the Eastern and Western AEROs, and will be located at the AERO headquarters or other AERO units. Wildlife Officers will be wildlife health specialists with AERO training and experience. SWLOs are assigned by their respective state wildlife agency

Field personnel will be selected from state and/or federal wildlife agencies or other sources at the discretion of the WO and SWLO and the AERO. Wildlife surveillance requires persons trained and proficient in wildlife capture, collection, and restraint. Wildlife surveillance requires that specialized experience in handling wildlife be combined with all other aspects of the AERO including specimen collection, handling, and biosecurity.

Field personnel initially will be expected to provide equipment for wildlife surveillance and control activities as is available through their respective agencies. Specialized and additional equipment will be provided by the AERO as it becomes available. Equipment required for field teams may include vehicles, ATVs, boats, helicopters, firearms, traps, laptop computers, cell phones, GPS units, radios, and clothing. Field teams may be operational at day or night, and in adverse weather conditions, and will need to be provided with appropriate gear for field collections and surveillance.

4 Roles and Responsibilities

Activities of the Wildlife Section will be a cooperative effort involving state departments of wildlife management, agriculture, and emergency response, as well as APHIS and other appropriate federal agencies.

The Wildlife Section will include a Wildlife Officer (WO) and a State Wildlife Liaison Officer (SWLO). The WO will lead the Wildlife Section in cooperation with the SWLO. In the event that an outbreak occurs in several states, WOs will be assigned to each state, or a WO may oversee operations in several states. The SWLO will represent the state wildlife management agency and will provide liaison between the Wildlife Section and the state wildlife management agency. The WC will facilitate for nationwide coordination and communication among units of the AERO(s) and the EMOC.

All Wildlife Section activities will be conducted within federal, state, and local laws under the direction and authority of the AERO Director. Wildlife Section activities will be highly coordinated with other elements of the emergency response including Diagnosis and Investigation, Disposal, Cleaning and Disinfection, and Biosecurity, and must be in compliance with all protocols.

The Wildlife Coordinator will:

-Provide for communication between the Wildlife Section(s) of the AERO and EMOC regarding wildlife issues

-Provide for communication and consistency among AEROs

The Wildlife Officer will:

-Supervise operations of the AERO Wildlife Section

-Act as liaison between the Wildlife Section and other units of the emergency response

-Determine operational needs for the Wildlife Section

-Request permits from state and federal agencies as needed

-Ensure that all Wildlife Section personnel fulfill all regulatory, biosecurity, and operational responsibilities

-Coordinate activities with the SWLO

-Ensure that appropriate methodologies are used for surveillance, specimen collection and submission, and wildlife control.

-Report all Wildlife Section activities to the AERO Director

The State Wildlife Liaison Officer will:

-Mobilize the state's wildlife management resources

-Identify state personnel to serve in the Wildlife Section

-Provide information regarding wildlife in the affected areas

-Assist with the duties of the Wildlife Officer

-Assist with state permits required for collection of wildlife

5 Quarantines and Movement Control

The geographic area in the vicinity of an infected premises will be identified and assigned a status relative to quarantines and movement control by the state and/or AERO. Wildlife Section activities will be conducted in these same identified quarantine areas, and all policies and procedures relative to quarantine and movement control will apply to all Wildlife Section activities. Terminology used by the Quarantine and Movement Control Working Group, APHIS, USDA are used is this manual. Terminology used is defined as follows:

Infected Premises (IP): A premises with one or more infected animals.
Infected Zone (IZ): Area within a 10 km radius of the IP.
Directly Exposed Premises: Premises exposed to susceptible animals from an IP.
Indirectly Exposed Premises: Premises exposed to non-susceptible animals or fomites from an IP.
Surveillance Zone (SZ): A 10 km wide area around the IZ.

6 Wildlife Risk Assessment

An initial objective of the Wildlife Section is to determine if there is a risk for infection of wildlife. This risk will be dependent upon the wildlife species present, susceptibility of these species to the disease agent, and the level of exposure to infected domestic animals and/or the disease agent. It will be critical to assemble all available information regarding wildlife in the affected area, and it may be necessary to conduct surveys to determine the presence of wildlife. Wildlife surveillance will be implemented when there is a potential for spread of the disease agent to susceptible wildlife. Surveillance of other potential wildlife vectors, including mechanical vectors, may also be implemented, but will be secondary to surveillance of susceptible wildlife.

The following items summarize information and evaluations necessary to determine if surveillance of wildlife is indicated. These items may be addressed simultaneously, but some of the necessary information may not be available. The assessment is intended to provide for an immediate response regarding the need for wildlife surveillance and will need to be completed with the information available.

1. Disease agent: Collect information on transmission and other epidemiologic factors related to the disease agent.

2. Domestic animals affected: Obtain information on species, numbers, and locations of susceptible domestic animals within the Infected Zone (IZ) and the Surveillance Zone (SZ).

3. Land use: Obtain maps that detail land use and habitat in the IZ and SZ.

4. Susceptible wildlife:

    a. Obtain information on experimental and natural infection of wildlife with the disease agent.

    b. Obtain information on transmission by wildlife and carrier status of wildlife.

    c. Obtain information on wildlife species as mechanical vectors.

5. Wildlife species present:

    a. Obtain maps, other published information, and data from the state wildlife agency on the distribution of wildlife species for the state, the IZ and the SZ.

    b. Obtain information on wildlife species present and distribution within the IZ and SZ area from local sources.

6. Risk for wildlife exposure:

    a. Evaluate available data to determine which wildlife species present in the affected area are of potential importance in terms of maintenance or spread of the disease agent.

    b. Evaluate the association of susceptible domestic animals with susceptible wildlife, and determine the potential for exposure of susceptible wildlife. This will depend on husbandry of the infected domestic animals, means of spread, geographical distribution of wildlife and wildlife habitat relative to the infected domestic animals, density of susceptible wildlife, seasonal movement patterns and home range, and whether a potential exists for wildlife to have been in the physical presence of the FAD/ED.

    c. Determine if the exposed wildlife population is isolated from other susceptible domestic animals or wildlife populations, or if the wildlife population is contiguous with other susceptible populations of the same or other species such that spread of the disease agent to other populations may occur.

    The above information (V.1-5) and evaluations (V.6) can be used to determine if there is a risk for infection of wildlife in the IZ and SZ, and if such exposure could result in maintenance or spread of the FAD/ED via wildlife. When such a risk is present, immediate and intensive surveillance is indicated.

As part of the Risk Assessment, the Wildlife Section will work with the state wildlife agency to determine the potential economic losses relative to wildlife and the proposed surveillance and control activities. This information will be provided to the Task Force.

7 Wildlife Surveillance

The protocol for surveillance of wildlife for a FAD/ED must be adapted to the prevailing circumstances in the affected area.

Wildlife surveillance will include active and passive methods deemed appropriate by the Wildlife Section leaders, and approved by the state agency with authority over wildlife. Active surveillance methods may include collection of susceptible wildlife, carcass searches, and road-kill surveillance. Passive surveillance may include investigation of reports of wildlife morbidity and/or mortality.

A. ACTIVE SURVEILLANCE

a. Wildlife Collection: Capture or lethal collection of wildlife may be the most efficient method for determining the disease status of free-ranging wildlife during a FAD/EDI. Section VII.A.d. below represents a framework for developing surveillance for a specific geographic location. This framework can be applied to multiple infected premises.

b. Carcass Searches: Carcass searches may be useful in small geographic areas where wildlife collections cannot be conducted, and when the FAD/ED is known to cause wildlife mortality. Carcass searches can be incidental or systematic. Incidental searches involve casual observations made within a given area. Incidental observations may result in detection of new cases, but cannot be used to estimate mortality or to determine that mortality has not occurred. Systematic carcass searches are labor intensive and include the use of transects, search efficiency estimates, abundance estimates, and estimates of carcass removal rates and can be used to estimate mortality or determine if mortality has occurred in a given area.

Personnel conducting carcass searches must fulfill all Wildlife Section training, reporting, specimen collection, disinfection, and biosecurity requirements as deemed appropriate by the AERO and listed below in Section VII.A.d.

Personnel conducting carcass searches may include wildlife collection team personnel, personnel assigned specifically to carcass searches, or other AERO surveillance personnel.

c. Road-kill Surveillance: Road-kill surveillance may be used in some circumstances to supplement other surveillance activities. Necessary conditions for road-kill surveillance would include weather conditions that do not preclude the use of specimens collected from carcasses, and resources that allow for personnel to examine carcasses.

Personnel conducting surveillance of road-killed animals must fulfill all Wildlife Section training, reporting, specimen collection, disinfection, and biosecurity requirements as outlined for wildlife collections below in Section VII.A.d.

Personnel examining road-kills may include wildlife collection team personnel, personnel assigned specifically to road-kill surveillance, or other AERO surveillance personnel.

d. Active surveillance sampling protocol:

Species: Surveillance will include all species determined to be at risk for infection.

Sampling priorities: Sampling will be conducted throughout each designated SZ; however, sampling will be targeted toward animals at highest risk of infection. Wildlife at highest risk within the SZ include wildlife species with relatively high levels of susceptibility that have direct contact with infected domestic animals, share pastures with infected domestic animals, and share feed/and or water with infected domestic animals.

Sampling zones: The geographic area from which wildlife will be sampled will depend on the following factors:

Number and distribution of infected domestic animals
Epidemiology of the FAD/ED
Habitat, land use, and geographic features
Wildlife species to be sampled
Density and distribution of wildlife
Movement patterns, home range, and behavior of wildlife species
Length of time the FAD/ED has been present
Locations of IZs and SZs

The geographic location of wildlife surveillance will be determined by the Wildlife Section leaders in coordination with the AERO. The area of surveillance must be large enough to include wildlife physically associated with the infected premises, wildlife that move between the infected premises and surrounding area, and wildlife displaced from the infected premises by eradication activities. Surveillance will be conducted in all suitable habitats within a prescribed distance of the premises. If positive wildlife is found, the area of surveillance may be expanded relative to the geographic location of the positive animals. In general, in an isolated outbreak involving a single premises, the prescribed distance may be twice the Predicted Maximum Distance Moved (PMDM) for the species in question given the available habitat and season. The PMDM is an estimate of the longest distance an individual of a given species will travel in a given time period under the prevailing circumstances. When more than one premises is affected in a local area, the area of surveillance will include all infected premises in an area of surveillance that extends to twice the PMDM from the outermost infected premises.

Sample size: The determination of sample size will be an adaptive process. To determine that a FAD/ED is not present, sample sizes must be large. Sample size will depend on a combination of factors to include the following:

Sampling statistics
Size of the population at risk

Epidemiology of the FAD/ED
Availability of field and laboratory resources
Collection methods
Predicted prevalence of infection in wildlife
How long the FAD/ED has been present
When the risk of transmission from domestic animals ended
Size of the IZ and SZ
Sensitivity of the diagnostic tests used

Sample size determinations will take into account ongoing observations of animals and animal sign, collection efficiency, abundance data that may be generated, and epidemiological information from other affected areas. Sample size will be determined by the Wildlife Officer with assistance from the Epidemiology Section.

Sampling time and duration: Wildlife surveillance will begin as soon as possible, and will continue until an adequate sample size is obtained, and for at least two incubation periods after the risk of transmission has ended. Timing and duration are based on the epidemiology of the FAD/ED and must account for the fact that exposure of wildlife may be delayed relative to the occurrence in domestic animals, and spread may occur more slowly in wildlife than in domestic animals. Surveillance may have to be repeated at selected time intervals in cases where there may be a delay in the ability to detect the agent in wildlife. Survey activities for long-lived organisms such as ticks may last for a year or more in order to account for the life span of the organism. Intensive surveillance involving lethal collection could reduce the density of susceptible wildlife, and may slow the spread of the FAD/ED, or make transmission less likely.

Model Protocol for Wildlife Surveillance

The following provides basic operational considerations for lethal collection or capture of wildlife during a FAD/EDI.

1. Premises: Surveillance will be conducted in the Infected Zone and Surveillance Zone surrounding each premises where wildlife exposure is determined as possible by the risk assessment.

2. Permits: Surveillance will be conducted under the authority of the state wildlife agency and/or the emergency management authority. Permits will be obtained through the state wildlife agency and other authorities as needed. Local law enforcement personnel will be made aware of collection activities that involve firearms.

3. Training needs: All Wildlife Section personnel will receive training on general FAD/EDI orientation, disinfection, biosecurity, disposal, specimen collection and processing at an assigned facility before conducting wildlife section activities.

4. Daily reporting: All wildlife surveillance teams will report to the Wildlife Section leaders in their respective area on a daily basis. All requested data will be included on the data sheets provided. All collection locations will be identified using GPS or other appropriate mapping methods.

5. Land access: All landowners and land managers in the quarantine zones where surveillance is to take place will be notified by Law Enforcement as to collection activities to be conducted in their areas.

6. Equipment needs: Wildlife Section personnel representing state or federal agencies will provide equipment from their respective agencies for use during surveillance. This may include weapons, traps, radios, vehicles, ATVs, boats, and clothing, although some of this equipment may be provided by the Task Force. Equipment including laptop computers, cell phones, GPS units, coveralls, gloves, boots, disinfectant, spray equipment and supplies for collection and handling of specimens will be provided by the Task Force.

7. Surveillance teams: Each team may include both biologists and law enforcement personnel. Personnel for field teams will be provided by state and federal wildlife agencies. The number of teams needed will be based on the extent of the outbreak, the need for wildlife surveillance as determined by the risk assessment, and the available resources.

8. Surveillance team distribution: Teams will be assigned work areas on a daily basis by the Wildlife Section leaders. Teams will be assigned to work in Infected Zones or Surveillance Zones.

9. Wildlife Collection methods: Collection methods will be as approved by the Wildlife Section. Methods may include shooting, trapping, and netting.

10. Specimen collection: Animals will be examined for lesions and diagnostic specimens will be collected. Training will be provided through Orientation & Training, and additional training will be provided in the field via trained FAD diagnosticians. Specimens will be collected, processed, and submitted as directed.

11. Data sheets: Data sheets will be provided by the Wildlife Section, will be completed in full by Wildlife Section personnel, and submitted to the Wildlife Section leaders as requested.

12. Carcass disposal: Carcass disposal will be as per AERO guidelines. One option is that carcasses will be sealed in plastic bags at the collection sites, and transported within a given Infected Zone or Surveillance Zone to a disposal site. If an active disposal site is not in use in the area, one will be provided for animals collected for wildlife surveillance.

13. Disinfection: Cleaning and disinfection will be as per AERO guidelines. Teams will follow disinfection protocols provided via Orientation & Training. Teams will work within either an Infected Zone or Surveillance Zone for the duration of surveillance in the given area and will disinfect between farms or other collection areas.

14. Summaries and Final Report: Wildlife Section leaders will provide summary reports as requested by the Task Force, and a final report summarizing all activities of the Wildlife Section.

B. PASSIVE SURVEILLANCE

a. Morbidity/Mortality Surveillance: Passive surveillance may in some circumstances be the most efficient method of sampling. Reports of wildlife morbidity and mortality may be received by the AERO from inside and outside of the IZ/SZs. Investigation of these reports will be at the discretion of the AERO and/or Wildlife Section, and will depend on the geographic location of the report, the species involved, and the status of surveillance in the given area. Reports of morbidity/mortality among susceptible species within an IZ/SZ will be investigated as possible FAD/ED cases by the Wildlife Section in coordination with the Surveillance Section. These investigations will follow all sampling and biosecurity requirements for the IZ/SZ. Reports of morbidity/mortality of non-susceptible species from within an IZ/SZ may be investigated under the same sampling and biosecurity requirements if there is a need to rule out a FAD/ED in the given case. Investigations of reported morbidity/mortality of susceptible species from outside the IZ/SZ will be based on the geographic location of the incident and the clinical signs and lesions reported. Such investigations may be conducted by Wildlife Section personnel or by other AERO personnel as determined by the Wildlife Officer and AERO.

8 Wildlife Control

If wildlife is determined to be a significant risk factor for persistence or dissemination of a FAD/ED, and/or infected wild animals are found, programs may be necessary to reduce local wildlife populations to a density at which transmission is unlikely (population reduction), or to reduce contact between infected livestock, wildlife, and uninfected domestic animals (population barriers).

The decision to begin control measures will be based on the risk assessment, results of surveillance, the prevailing circumstances in the area of concern, and the feasibility of conducting successful control measures. Feasibility of control is based on the species involved, density, geographic distribution, topography of the area, and the practicalities of applying control measures under the local circumstances.

Control programs will require immediate and aggressive actions that may have significant impacts on local wildlife and environments. However, short-term and localized impact must be weighed against the long-term and widespread consequences of allowing a FAD/ED to become established and /or spread in wildlife. These actions may protect both domestic livestock and wildlife. Opposition to population reduction/elimination should be anticipated from interest groups as diverse as hunters and animal rights activists. Also, it is important to acknowledge that disease control in wildlife populations will be extremely difficult, expensive, time consuming, and labor intensive, or may not be successful.

Methods

Population reduction

Lethal collection: Lethal collection initially will be an extension of the wildlife collections for surveillance described above. The geographic area may remain the same or be enlarged, but the length of time and intensity of activity probably will increase. Lethal collection by shooting can be conducted on the ground or from the air, and during the day or night, depending on the circumstances. Where shooting is used, it will be important to ensure that the control efforts do not cause dispersal of the target animals.

Trapping and netting: Trapping and netting are useful with some species, and animals captured in live traps or nets can be humanely euthanized.

Dog hunting: The use of dogs may increase efficiency in the collection of certain wildlife species, but may increase the risk of dispersal. If dogs are to be used, dogs will need to be purchased by the AERO, or hunters with dogs hired and incorporated into control teams. Such persons would be required to complete all AERO training and observe all biosecurity requirements.

Samples

Samples may be collected during wildlife control efforts to confirm presence of the disease agent or to develop additional information. Samples will be collected and processed as described above in Wildlife Surveillance.

Population barriers

Depopulation buffer: Susceptible wildlife may be depopulated from a circumscribed area in order to provide a buffer zone between infected and uninfected animals. Depopulation in a buffer zone will follow the guidelines presented for Wildlife Surveillance and Wildlife Control.

Vaccination buffer: Vaccination of wildlife in order to provide a buffer zone of vaccinated animals between infected and uninfected animals may be useful if vaccination of domestic animals has been approved, and if vaccine and delivery methods have been validated for wildlife. Vaccination may also be conducted throughout an IZ. Currently vaccination of wildlife is not feasible except in rare instances due to a lack of efficacious vaccines and/or delivery systems.

Fencing: Fencing may be useful in separating infected animals from uninfected animals, and may also be useful in preventing movement or dispersal of wildlife between infected and uninfected zones. Factors affecting the efficiency of fencing during a FAD/EDI include the target species, the size and topography of the geographic area, availability of financial and material resources, the length of time available for fence construction, availability of personnel for monitoring and maintenance of the fence, the length of time the barrier must be in place, and daily and seasonal movement patterns of susceptible and non-susceptible wildlife. The need to restrict movement of targeted wildlife, and the need of target and non-target wildlife to access food, water, cover and other resources necessary for survival must be considered.

Habitat alteration: Habitat alteration may under some circumstances be used to eliminate the attractiveness of certain areas for wildlife, to create buffer zones between infected and uninfected wildlife, or to attract wildlife to areas away from geographic areas where a FAD/ED occurs. Habitat alteration may include either destruction or creation of food, water, cover or other resources. Any program involving habitat destruction should be subject to an environmental assessment. Destruction of habitat in a localized area would have the most immediate applicability in a FAD/EDI because it might immediately eliminate use of treated areas by wildlife. Such activities could have long-term effects on the local environment. Destruction of food and water in a given localized area also might reduce use of the area by wildlife but could affect the survival of target and non-target wildlife. Destruction of habitat over larger areas would not be acceptable. Development of food, water, cover or other needed resources away from an infected area might be useful in altering the local habitat use patterns of susceptible species. Creation of such resources might divert wildlife to enhanced areas and away

from an infected area. Such methods would need to be evaluated relative to their potential effectiveness, timeliness, and environmental impact.

Hazing: Hazing may be useful in specific circumstances, e.g., keeping wildlife away from a carcass disposal site, but hazing should not be used to disperse wildlife from an affected area as this may result in further spread of the FAD/ED. In a larger area, hazing may serve as a means to create a barrier between infected and uninfected animals.

9 Carcass Disposal

Carcass disposal will be conducted as per guidelines provided by the AERO. The Wildlife Section will work with the Disposal Section to develop specific protocols for application of carcass disposal policies to Wildlife Section activities. Wildlife Section personnel will be trained in and comply with all carcass disposal policies and procedures. Special consideration must be given to the circumstances, locations, and environment in which wildlife surveillance and/or control will take place.

Where surveillance/control is conducted in an IP/SZ with an established disposal site, and where movement of carcasses will not require additional cleaning and disinfection relative to established biosecurity, wildlife may be moved to a disposal site by the Wildlife Team, or via other transport.

Where surveillance/control is conducted in areas without access to an established disposal site, carcasses will either be transported to a disposal site, or disposed of on site.

When carcasses must be transported to a disposal site outside of the IP/SZ of collection, all biosecurity procedures designated for such movements must be followed. Transport may be conducted by the Wildlife Team or other AERO personnel. Transport will require external disinfection of carcasses, sealing of carcasses in approved containers, disinfection of the containers, and disinfection of the Wildlife Team and all equipment and vehicles.

Carcasses may be disposed of on site when approved through the Disposal Section as per guidelines provided by the Disposal Section. Disposal may be conducted by the Wildlife Team, e.g. burial of small birds or rodents. Where disposal cannot be conducted by the Wildlife Team, e.g. incineration or burial of large mammals, the Disposal Section will arrange for disposal sites to be established within areas where wildlife surveillance/control will occur.

10 Cleaning and Disinfection

Cleaning and disinfection (C&D) of Wildlife Section vehicles, equipment, clothing, and personnel will be as described in the AERO Cleaning and Disinfection Guideline. The AERO Cleaning and Disinfection Section will develop specific policies and procedures for C&D relative to Wildlife Section activities in cooperation with the Wildlife Section. Wildlife Section personnel will be trained in and comply with all policies and procedures regarding C&D.

Cleaning and disinfection policies and procedures will apply to all personnel, vehicles, equipment, and supplies entering and leaving an IP, IZ, or SZ including weapons, computers, cell phones, ATVs, vehicles, boats, trailers, animals, and clothing.

Where Wildlife Section activities are conducted on an IP with ongoing C&D, Wildlife Section personnel, vehicles, equipment, and supplies may undergo C&D as provided at the site by the AERO. However, where Wildlife Section activities are not conducted within an IP or IZ with accessible C&D, C&D sites will be established and operated by C&D Section personnel, or the Wildlife Teams will be prepared to conduct C&D procedures.

Where Wildlife Teams must conduct C&D, Wildlife Section teams will be trained and provided with protocols and equipment to conduct C&D. This will include equipment and supplies for C&D of all personnel, equipment, and supplies including weapons, computers, cell phones, clothing, ATVs, vehicles, boats, and trailers. These protocols will prescribe specific methods for C&D under field conditions as well as disposal of disinfectants and other materials.

Protective Clothing: Wildlife teams may conduct operations at day and/or night, under all potential weather conditions, and will require appropriate clothing. In addition, wildlife activities often will require specialized equipment such as hunting gear. Cleaning and Disinfection requirements as designated for the IZ/SZ will apply to these clothing items. Easily disinfected clothing including disposable coveralls, cloth coveralls, rubber boots, and rubber gloves should be used when possible. Required C&D should be considered when making clothing choices.

Personnel: The number of persons per field team will be based on the activities being conducted, and safety issues. Nonessential personnel should not accompany field teams. Wildlife personnel will complete all biosecurity requirements between premises and when leaving an IZ/SZ.

Equipment: Equipment used within an IZ/SZ to collect or capture susceptible animals is assumed to be contaminated. This may include traps, cages, nets, vehicles, weapons, knives, radios, phones, computers and notebooks. Equipment for use in fieldwork should be disposable where possible, packaged in pre-planned supply kits, and easy to clean and disinfect. All unessential equipment should be removed from vehicles prior to proceeding to an IZ/SZ.

11 Biosecurity

Biosecurity during Wildlife Section activities will be as described in the AERO Biosecurity Manual. The AERO Biosecurity Section will develop additional specific policies and procedures for Wildlife Section activities in cooperation with the Wildlife Section. Wildlife Section personnel will be trained in and comply with all policies and procedures regarding biosecurity. FAD/EDI policies will apply to all Wildlife Section team activities and movement between an IP, IZ, SZ or other area.

Special consideration will be given to biosecurity and movement of Wildlife Section teams during surveillance and/or control operations. When Wildlife Section teams are operating on an IP, all Biosecurity policies regarding movement on or off the site will apply. When Wildlife Section teams are operating in an IZ or SZ, a decision will be made as to whether teams can move from property to property within an IZ or SZ without C&D, or if C&D must occur between all properties.

12 Quarantine Issues

Hunting seasons

Transport of wild animal carcasses from an IZ or SZ presents a risk for spread of a FAD/ED. Movement of animal products is prohibited within the IZ. Animal products may be moved within the SZ, but movement of animal products out of the SZ is by permit only. These regulations apply to wild animal carcasses, parts, and products obtained through hunting.

The Wildlife Section will recommend that hunting activities be banned in each IZ where appropriate. It may be necessary to close hunting seasons over a larger geographic area to include multiple IZs in a given region of a state. The Wildlife Section will recommend that hunting of susceptible wildlife species in the SZ also be closed where appropriate. Hunting of non-susceptible species may be allowed within the SZ, but only under permit and biosecurity arranged through the AERO.

Restoration and wildlife management programs

Transport of live animals within or into an IZ is prohibited. Non-susceptible animals can be moved non-stop through an IZ. Susceptible animals can be moved within a SZ under special conditions and a permit. Non-susceptible animals can be moved within a SZ under permit, and out of a SZ under permit.

The Wildlife Section will determine if wildlife restoration or management programs that involve movement of animals are underway or planned by public and private organizations, and provide this information to the Quarantine Section.

Hunting preserves and exotic animal facilities

Hunting season closings described above (see **Hunting seasons**) will also apply to hunting preserves. The Wildlife Section will assist the Quarantine Section in determining the presence of hunting preserves and exotic animal facilities.

When a captive wildlife facility is located within an IZ, depopulation of susceptible species may be required by the AERO. In these cases, the Wildlife Section will assist in the physical depopulation in coordination with other AERO Sections as requested.

Other wildlife-associated activities

Field trials, pigeon races and other wildlife-associated activities involving direct or indirect contact with wildlife occur throughout the United States. The Wildlife Section will identify all such activities within the IZ/SZ, and determine whether they involve susceptible or non-susceptible species. Information regarding these activities will be provided to the Quarantine and Disease Control Sections, and the Wildlife Section will assist in communicating with the affected groups.

Wildlife Rehabilitators

Transport of live animals within or into an IZ is prohibited. Non-susceptible animals can be moved non-stop through an IZ. Susceptible animals can be moved within a SZ under special conditions and a permit. Non-susceptible animals can be moved within a SZ under permit, and out of a SZ under permit.

The Wildlife Section will assist in determining the locations of wildlife rehabilitators, and provide this information to the Quarantine and Disease Control Sections. Wildlife rehabilitators will be required to comply with all regulations.

Wildlife rehabilitators may not accept susceptible species or other wildlife from the IZ/SZ except under certain conditions outlined above. If individuals of a susceptible species are brought to a rehabilitator from within an IZ/SZ, the animals should be euthanized and the AERO contacted immediately so that specimens can be collected for diagnostic evaluation. If a rehabilitator receives reports of sick or dead wildlife from within the IZ/SZ, these should be reported to the AERO.

13 Public Relations

Public support for AERO activities is essential for success. The general public, including various constituency groups such as consumptive and non-consumptive wildlife users, sport-hunting interests, farmers, and animal welfare activists, will be affected by an FAD/EDI. Public Affairs is responsible for providing information to the general public and the media, and makes all public statements. The Wildlife Section will assist Public Affairs in understanding wildlife issues and Wildlife Section activities.

Wildlife activities may receive media attention. Specific information to justify Wildlife Section activities will be developed by the Wildlife Section as requested by Public Affairs.

The Wildlife Section will communicate with wildlife resource agencies and organizations after clearing such communication through Public Affairs and the AERO Director's office.

If a wildlife agency disagrees with a AERO policy or procedure, the wildlife agency should speak through it's own agency personnel. AERO personnel, including the WO and SWLO, must comply with AERO policies and procedures.

14 Appraisal

Wildlife surveillance and control may result in significant loss of wildlife resources and wildlife habitat in the affected areas. The Wildlife Section will assist the AERO in appraisal of such losses. Appraisals will be based on estimates of the cost for a state wildlife agency to develop and conduct management programs to re-establish lost wildlife and/or wildlife habitat in the affected areas.